EXPOSURE TO HEAVY METALS IN A HIGHLY INDUSTRIALIZED AREA

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Background and aims
The area under study is one of the more heavily industrialized in southern Spain, with a population of almost 250.000 people. Particularly, cadmium, nickel, and chromium are present in the industrial emissions particulate matter. Also, surveys show that population in the area perceives that is being strongly affected by the industrial activity. Moreover, this area is within a cluster of Spanish provinces showing systematically higher mortality rates

Methods
Subjects were a random representative sample of the 5 to 69 years old individuals residents in this area. A total of 432 subjects selected were residents in the different municipalities and neighbourhoods of the area, which are at different distances of industrial complexes. A urine sample was collected from participants as well as questionnaires for diet, socio-demographic characteristics, occupational exposures, and other individual level characteristics behaviors. Other variables considered were wind direction and speed, distance to industries, and distribution of air pollutants in the area, according to automatic monitoring stations and to diffusive passive samplers

Results
Urine concentrations (μg/ g de creatinine) ranged from 0,67-0,82 for nickel, 0,42-0,82 for nickel, and 0,33-0,35 for chromium. There were significant differences for Cd and Ni, but not for Cr. Also, no significant differences were found when using the 95th percentile. Several individual factors were associated with significantly higher urine concentrations of metals. Also, the effect of ecological variables were explored in the analysis, such as wind direction, distance to industrial sources, and other

Conclusions
Explanation for results are that differences in environmental exposures between areas are small, not homogeneously distributed according to time or space, and some individual characteristics may be not well assessed by the methodology employed. Environmental exposure to selected chemicals in the study area were of low magnitude and not different to urban settings in the region